VOLUME 12 1991

SUBJECT INDEX

Acetyl-L-carnitine, 685
Acetylcholine, 93, 407
Acetylcholinesterase, 181
Acetylcholinesterase staining pattern, 389
Adenosine, 523
α_2-Adrenergic receptors, 131
Age, 455
Age at onset, 375
Aged, 449
Aged cats, 175
Aged male rats, 123
Aged mice, 635, 639, 645, 653
Aged rats, 635, 639, 645, 653
Aged rats, genetics, 659
Aged rats, pathology, 659
Aged rodents, dietary restriction, 679
Aged rodents, microbiology, 663, 669
Aged rodents, nutrition, 679
Aged rodents, pathology, 635, 663
Aged rodents, virology, 663, 669
Aging, 3, 13, 19, 25, 31, 55, 71, 85, 93, 113, 131, 137, 145, 151, 165, 171, 181, 193, 201, 211, 219, 233, 239, 249, 259, 267, 271, 277, 283, 289, 295, 317, 363, 419, 425, 431, 437, 441, 455, 469, 475, 481, 503, 511, 523, 535, 543, 557, 567, 601, 605, 685, 695
Aging, anatomy, 645
Aging, animal models, 625, 635, 639, 645, 653, 659, 663, 669, 673, 679, 695
Aging, comparative studies, 625
Aging, genetics, 625, 635, 673
Aging, learning and memory, 645
Aging, mathematical models, 625
Aging, physiology, 645
Aging, statistics, 695
Alertness, 463
Alkaline elution, 367
Alpha-adrenergic receptors, 567
Alternative mRNA splicing, 575, 585
Aluminum, 413
Alz-50, 295
Alz 50 immunoreactivity, 389
Alz 50 immunostaining, 389
Alzet pump, 39
Alzheimer, 367
Alzheimer's disease, 13, 19, 61, 65, 71, 85, 131, 255, 259, 283, 295, 313, 317, 357, 375, 389, 401, 469, 495, 511, 531, 575, 585, 593
Amino acids, 407
para-Aminoclonidine, 131
Amygdala, 123, 389
Amyloid, 85, 295, 313, 575, 585
β-Amyloid peptide, 575, 585
Amyloid precursor protein, 575, 585
Amyloid precursor-related protein, 575, 585
Anion transport, 13
Anisotropy, 401
Anterior olfactory nucleus, 295
Aromatase activity, 123
Arterial baroreflex, 601
Astrocytes, 165, 171, 495, 593
Autoimmunity, 47
Axotomy, 151

Band 3, 13
Basal forebrain, 39, 503
Basal ganglia, 245
Bed nucleus of the stria terminalis, 419
Behavioral slowing, 463
Beta-adrenergic receptors, 567
Beta-endorphin, 113, 239
Bradykinin, 469
Brain aging, 523
Brain lipids, 55
Brain MRI, 245
Brain-reactive antibodies, 47
Brain stem, 487

C57BL mice, 557
Calcium, 267, 469
Carbachol, 363
Catecholamines, 289
Cell counts, 425
Centrophenoxine, 685
Cerebellar vermis, 371
Cerebellum, 425, 523
Cerebral blood flow, 503
Cerebral cortex, 503
Cerebral metabolism, 137
Cerebral reduced glutathione, 227
Cerebrospinal fluid, 71
Choline, 61, 65
Cholinergic neurons, 39
Cholinesterase inhibitors, 181
Circulatory control, 601
Classical conditioning, 249, 283
Classical plaque, 593
Cognitive behavior, 277, 685
Cognitive behavior evolution, 277
Cones, 455
Corticosteroid receptors, 475
CSF, 267
Cytosolic androgen receptor, 123

D-1:D-2 interactions, 431
Degeneration, 151
Delayed response, 99
Dementia, 267
Dementia of Alzheimer type, 161
Dendrites, 201, 535
Denervation supersensitivity, 567
Deoxyglucose, 137
Depressed elderly, 245
Dexamethasone suppression test, 161
Diet, 455
Dietary restriction, 639
Diffuse Lewy body disease, 313
Diffusible, 267
DNA repair, 367
Dopamine, 431
Dopamine D-1 and D-2 receptors, 431
Dopamine release, 219
Dopaminergic behavior, 431
Down's syndrome, 495

Early handling, 31
Electrophilic agents, 227
Electrotonic length, 201
ELISA, 449
EMG, 249
Entorhinal cortex, 535
Enzyme histochemistry, 523
Ergot alkaloids, 227
Ethanolamine, 65
Ethylnitrosourea, 367
Excitatory postsynaptic potentials, 201
Exercise and aging, 47

Familial amyloidosis, 313
Females, 31
Ferritin, 413
Fibroblasts, 469
Finnish type, 313
Fischer 344 rats, 249, 419, 449
Food restriction, 55, 455, 685
Fourth ventricle, 371
Fura-2, 469

GABA, 93, 407
Gallyas silver stain, 357
Gastric ulcers, 437
Gelsolin, 313
Gene expression, 113, 495
Genetics, 685
Gerontology, 535
Glial fibrillary acidic protein (GFAP), 165, 171
Gliosis, 255
Glucocorticoid receptor mRNA, 475
Glucocorticoid receptors, 31
Glucocorticoids, 31
Glutamate, 93
Glutathione depletion, 227
GnRH, 113
Golgi, 535
Granule cells, 441
Grooming, 437

Handling, 685
High-speed chronoamperometry, 487
Hippocampal field CA1, 295
Hippocampus, 31, 201, 441, 449, 475, 481
HLA antigens, 375
Human brain, 511
Human cerebral cortex, 259
Human platelets, 531
Huntington's disease, 495
Hyperthermia, 437
Hypocaloric diet, 277, 455
Hypothalamus, 113, 123, 239,511

Immunocytochemistry, 239, 259, 511
Immunoglobulin G, 13
Inositol phosphates, 469
In situ hybridization, 113, 193
Intraocular transplants, 487
In vitro pharmacology, 363
Iodoantipyrine, 503
Iron, 413
Isoaspartate, 19
Isoprenaline, 363

KLH serum antibodies, 47
Kunitz-type protease inhibitor, 85

Kynurenic acid, 407

Laboratory animals, husbandry, 653, 659, 663, 669, 679
Laser-doppler flowmetry, 503
Learning, 517, 685
Lewy body, 313
Life span, 455
Ligand binding, 193
Light microscopy, 239
Limbic system, 3
Locus ceruleus lesion, 567
Locus coeruleus, 131, 543
Longevity, 317
Longitudinal model, 277
Longitudinal study, 605
Lymphocytes, 367

Macaca mulatta, 99
Magnetic resonance, 371
Maintenance of neurons, 317
Matching-to-sample, 233
Medulla, 371
Membrane fluidity, 401
Membrane proteins, 13
Memory, 99, 181, 233, 481, 685
Meta-chlorophenylpiperazine (MCPP), 137
Methanesulfonyl fluoride, 181
Methylation, 19
N-Methyl-D-aspartate, 219
Microglia, 151
Microtubule-associated proteins, 357
Microviscosity, 55
Midbrain, 371
Minimal-stimulation, 441
Monkey, 93, 481
Morphometry, 259
Morris water maze, 277
Motivation, 25
Motoneuron, 151, 271
Motor activity, 25
Motor behavior, 685
Motor skill learning, 99
Motor-unit, 271
Mouse, 239
MPTP, 557
mRNA, 113
MSF, 181
Multi-infarct dementia, 161
Muscarinic receptors, 219
Muscle fiber, 271
Myelin sheath, 175

Naltrexone, 145
National Institute on Aging, 635
Nb_2 lymphoma cells, 145
Neophobia, 685
Nerve crush, 271
Neural adaptation, 601
Neuritic plaques, 85, 389
Neurodegeneration, 85, 255
Neurofibrillary tangles, 295, 389
Neurofilament triplet, 357
Neurofilament-200, 171
Neuronal activation, 317
Neuronal death, 543, 557
Neuropeptide Y, 407
Neuropsychological assessment, 463
Neuropsychology, 481
Neurotoxins, 227
NGF, 449
Nicotine, 233
Nicotinic acetylcholine receptors, 259
Nictitating membrane, 249
NMDA, 93
Nonhuman primate, 233
Noradrenergic denervation, 567
Norepinephrine, 407, 487
Norepinephrine release, 219
Nuclear androgen receptors, 123
5′-Nucleotidase, 523

Object discrimination learning, 99
17-OHCS, 161
One-trial learning, 181
Opiates, 113
Outer nuclear layer, 455
Oxytocin, 511

Paired helical filaments, 295, 357
Papaverine, 227
Parahippocampal gyrus, 295
Paraventricular nucleus, 511
Parkinson's disease, 313
Perforant pathway, 441
Peripheral benzodiazepine receptor, 255
Peripheral nerves, 175
Phosphatidylcholine, 61
Phosphatidylserine, 437
Phosphoinositide hydrolysis, 219
Phospholipids, 65
Phosphorus, 267
Photoreceptor, 455
Pick's disease, 495
[^{3}H]PK 11195, 255
Plasticity, 271, 317, 517
Platelets, 65, 401
Pons, 371
Prefrontal cortex, 131
Preoptic area, 123
Prolactin bioactivity, 145
Proopiomelanocortin, 113
Prooxidants, 227
Protease inhibitors, 71
Protective mechanisms, 317
Protein carboxyl methyltransferase, 19
Proteolytic degradation, 85
Purkinje cells, 425

Quantal analysis, 441
Quantitative receptor autoradiography, 193

Radial maze, 605
Raphe nucleus, 543
Rat, 31, 93, 137, 211, 249, 271, 277, 289, 363, 449, 475, 523, 535, 605
Reaction time, 99
Recall memory, 25
Receptors, 93
Red blood cell, 13, 61
Regeneration, 271
Regenerative processes, 317
Renal sympathetic activity, 601
Reproduction, 113
Restricted diet, 277, 455
Retina, 455
Retinal, 455
Retinal amacrines, 543
Reward learning, 181
Rodents, 685
Rods, 455

S_1-protection analysis, 575, 585
Segmental demyelination, 175
Senescence, 455, 487, 517
Senile plaques, 295
Septum, 3
Septum pellucidum, 3
Serotonin, 289, 407
Serotonin$_{1B}$ receptors, 137
Serotonin uptake sites, 531
Serum, 267
Serum testosterone, 123
Sex differences, 19, 31
Sexual behavior, 123
Silver impregnation, 357
Sleepiness, 463
Small intestine, 363
Solution hybridization assay, 165
Somatostatin, 407
Spatial learning, 277
Spatial memory, 47, 441, 605
Strategies, 605
Stress, 145, 437
Striatum, 39, 557
Subcortical, 245
Substantia nigra, 543
Superior colliculus, 289
Survival, 55
Sympathetic innervation, 363
Synapses, 3
Synapsin I, 171
Synaptic density, 3
Synaptic efficacy, 201, 517
Synaptogenesis, 517

Tau protein, 357
Temporal regulation, 25
Testosterone, 419
Thy-1 antigen, 165
Tissue culture, 469
Transcript quantitation, 575, 585
Tubulin, 357
β-Tubulin, 171
Turnover, 289

Ubiquitin, 357
Ultrastructure, 175, 211
Urinary free cortisol, 161

Vasculature, 211
Vasopressin, 419
Visually guided reaching, 99
Visuospatial orientation, 99

Wistar/Louvain rat, 425

AUTHOR INDEX

Abboud, F. M., 601
Abraham, C. R., 495
Adinolfi, A. M., 175
Adolfsson, R., 531
Ahanotu, E. N., 47
Aitken, D. H., 31
Algeri, S., 55, 277
Amaral, D. G., 481
Andersson, A., 531
Andorn, A. C., 131
Angelucci, L., 605
Anson, M., 193
Appel, N. M., 193
Arcangeli, K. R., 181
Arnerić, S. P., 503
Aswad, D. W., 19

Bachevalier, J., 99
Bakalian, A., 425
Baker, D. M., 363
Barden, N., 475
Barnes, C. A., 47, 441
Bartholomeus, I. G. P., 13
Baumgardner, D., 211
Beal, M. F., 407
Bein, T., 283
Benzi, G., 227
Berger, F., 71
Bhatnagar, S., 31
Biagini, L., 277
Biddle, F. E., 543, 557
Bierer, L. M., 65
Billiar, R. B., 239
Black, J. E., 325
Blake, M. J., 193
Bliwise, D. L., 463
Blume, A. J., 575, 585
Boerrigter, M. E. T. I., 367
Bogte, H., 511
Bosman, G. J. C. G. M., 13
Boyko, O. B., 245, 371
Braak, E., 357
Braak, H., 357
Brickson, M., 99
Briski, K. P., 145
Brown, L. M., 219
Buccafusco, J. J., 233
Butterworth, R. F., 255

Cano, J., 289
Caprioli, A., 605
Carskadon, M. A., 463
Chambers, K. C., 123
Chan, H. W., 85
Chang, F.-L. F., 517
Chapleau, M. W., 601
Chase, M. H., 175
Choi, B. H., 19
Chotani, M., 401
Clough, G., 653
Coates, M. E., 679
Cole, G. M., 85
Coleman, P. D., 535, 685
Collier, T. J., 685
Cork, L. C., 93, 99, 407, 495
Corman, B., 425
Cotman, C. W., 330
Crutcher, K. A., 449
Cullen-Dockstader, K., 211
Curti, D., 227

D'Agata, V., 437
Davidson, M., 65
Davies, I., 328
Davis, K. L., 65
Davis, P. B., 295
Davis, R. E., 185
Deerberg, F., 659
De Grip, W. J., 13
DeKosky, S. T., 3
Delamarche, C., 71
Delhaye-Bouchaud, N., 425
De Man, A. J. M., 13
Dement, W. C., 463
De Souza, E. B., 193
Deupree, D. L., 201
Diorio, D., 255
Dobie, D. J., 419
Doraiswamy, P. M., 245, 371
Dorsa, D. M., 419
Drago, F., 437

Ebeling, S. C., 375
Eggers, R., 336
Eikelenboom, P., 367
Ellinwood, E. H., Jr., 371
Eriksson, K., 531
Eskin, T. A., 389

Festing, M. F. W., 673
Fifkova, E., 211
Figiel, G. S., 245, 371
Finch, C. E., 1, 165, 625
Fleming, J. T., 413
Fleshner, M., 47
Flood, D. G., 535
Forster, M. J., 47
Foster, T. C., 441
Fowler, D. E., 181
Frangione, B., 313
Freo, U., 137
Fuchs, J. L., 523

Gallard, L., 71
Geddes, J. W., 19, 330
Gerhardt, G. A., 487
Ghirardi, O., 605
Ghiso, J., 313
Giacobini, E., 259
Gibson, G. E., 469
Giuliani, A., 605
Gonzales, R. A., 219
Gorini, A., 227
Goss, J. R., 165
Goudsmit, E., 511
Gracon, S., 185
Granholm, A.-C., 487
Grassi, M., 437
Greenamyre, J. T., 334
Greenough, W. T., 325, 517
Greenwood, C. E., 543, 557
Gross, J., 65
Gruenewald, D. A., 113
Grundke-Iqbal, I., 357

Hajduczok, G., 601
Haltia, M., 313
Hamill, R. W., 389
Harik, S. I., 567
Hashizume, K., 271
Haug, H., 336
Hazzard, D. G., 645
Henneberry, R., 75
Herrera, A. J., 289
Heyman, A., 375
Hofman, A., 367
Hofman, M. A., 338, 511
Holland, D. P., 543
Hoover, T., 185
Huang, H.-M., 469
Hunter, A. S., 151
Hunter, C. L., 181
Husain, M. M., 371

Iqbal, K., 357, 609
Isaacs, K. R., 325, 517

Jackson, W. J., 233
Jacobsen, J. S., 575, 585
Jenden, D., 61
Johnson, B. A., 19
Johnson, I. P., 151
Jones, T. W., 219
Joseph, J. A., 193
Joshi, D., 239
Joshi, J. G., 413

Kakigi, T., 161
Kalaria, R. N., 131, 567
Kanda, K., 271
Kanof, P. D., 65
Kim, R. C., 19
Kiuru, S., 313
Knook, D. L., 367
Koo, E. H., 495
Krishnan, K. R. R., 245, 371
Kwan, M. M., 543

Lake, S., 609
Lal, H., 47
Landfield, P. W., 455
Landis, L. S., 99
Lapham, L. W., 389
Laudenslager, M. L., 47
Lejeune, H., 25
Leslie, S. W., 219
Levine, E., 283
Linville, D. G., 503
Lligoña, L., 55

McDonald, W. M., 371
McEwen, B. S., 346
McNaughton, B. L., 441
McNeill, T. H., 389

Machado, A., 289
Maeda, K., 161
Maelicke, A., 259
Maier, S. F., 47
Malin, D. H., 181
Manfridi, A., 277
Mann, D. M. A., 340
Marcusson, J., 531
Mariani, J., 425
Marzatico, F., 227
Masaro, E. J., 639
Masliah, E., 85
Matsumoto, A. M., 113
Matsuyama, S. S., 375
Mattson, M. P., 343
Mauceri, F., 437
Mazzeo, R. S., 47
Meaney, M. J., 31, 255, 475
Miller, B. L., 61
Miller, D., 313
Miller, D. B., 171
Miller, M. A., 419
Miller, M. M., 239
Mishkin, M., 99
Mohs, R. C., 65
Moos, W. H., 185
Morales, F. R., 175
Morgan, D. G., 165
Morris, J. C., 295
Moss, D. E., 181
Muenkel, H. A., 575
Mullaart, E., 367
Murray, A. M., 431

Nekich, J. C., 463
Nelson, J. F., 239
Nemeroff, C. B., 245

O'Callaghan, J. P., 171
Osgood, L. D., 181
O'Steen, W. K., 455

Padmashree, T. S., 267
Palmer, M. R., 487
Pastoris, O., 227
Pavia, M. R., 185
Peiffer, A., 475
Pendlebury, W. W., 283
Pennisi, G., 437
Piletz, J. E., 401
Pitsikas, N., 55, 277
Potter, H., 495
Pouplard-Barthelaix, A., 71
Price, D. L., 93, 99, 407, 495
Price, J. L., 295
Purba, J. S., 511

Ramacci, M. T., 605
Rao, G., 441
Rao, V. P., 245
Rapoport, S. I., 137
Rapp, P. R., 481
Raskind, M. A., 419
Read, S., 61
Reisner, E. G., 375
Renvoize, E. B., 375
Rogers, J., 695, 699
Roselli, C. E., 123
Roth, G. S., 193

Saitoh, T., 85
Salmona, M., 55
Santer, R. M., 363
Sapolsky, R. M., 31, 348
Sarasua, M., 401
Scapagnini, U., 437
Scheff, S. W., 3, 349
Schröder, H., 259
Schwarz, R. D., 185
Scott, A. A., 3
Sears, T. A., 151
Sebesteny, A., 663
Segar, L., 407
Seidel, W. F., 463
Seniuk, N. A., 557
Shah, S. A., 371
Shankar, S. K., 267
Shelton, E. R., 85
Shintani, T., 161
Shirokawa, J. M., 19
Small, G. W., 375
Soffié, M., 25
Sofroniew, M. V., 351
Solomon, P. R., 283
Soncrant, T. T., 137
Spadaro, F., 437
Spatz, L., 75
Sprott, R. L., 635
Srinivas, K. M., 267
Sromek, S. M., 567
Stagg, C. A., 193
Storey, E., 407
Struble, R. G., 259
Subbakrishna, D. K., 267
Subhash, M. N., 267
Sulkava, R., 375
Suranyi-Cadotte, B. E., 255
Swaab, D. F., 317, 352, 511
Sylvester, P. W., 145

Tacconi, M. T., 55
Tang, C., 61
Tanimoto, K., 161
Tatton, W. G., 543, 557
Terada, T., 161
Terry, R. D., 85
Thaler, H., 469
Thompson, R. F., 249
Thornton, J. E., 123
Tofel-Grehl, B., 469
Topple, A., 211
Toral-Barza, L., 469
Toups, P. J., 181
Trent, R. D., 219
Turner, D. A., 201

Unger, J. W., 389
Urban, J. H., 419

Valerio, C., 437
van der Logt, J. T. M., 669
Van Der Togt, C. M. A., 367
Van Der Woude, P. F., 511
Van Duijn, C. M., 367
Van Kalmthout, P. J. C., 13
Verrier, M. C., 543
Vijg, J., 367
Villa, R. F., 227
Vitek, M. P., 575, 585
Waddington, J. L., 431
Walker, L. C., 93, 99, 407
Watson, S. P., 363
Wegiel, J., 593
Weingartner, J., 449
Weiss, C., 249
Welner, S. A., 255
Wenk, G. L., 93
Westbrook, S. L., 219
White, D. L., 295
Whitehouse, P., 401
Wierda, M., 511
Williams, L. R., 39
Winblad, B., 609
Wisniewski, H. M., 593
Wisniewski, T., 313

Yamuy, J., 175

Zaidi, T., 357
Zilles, K., 259